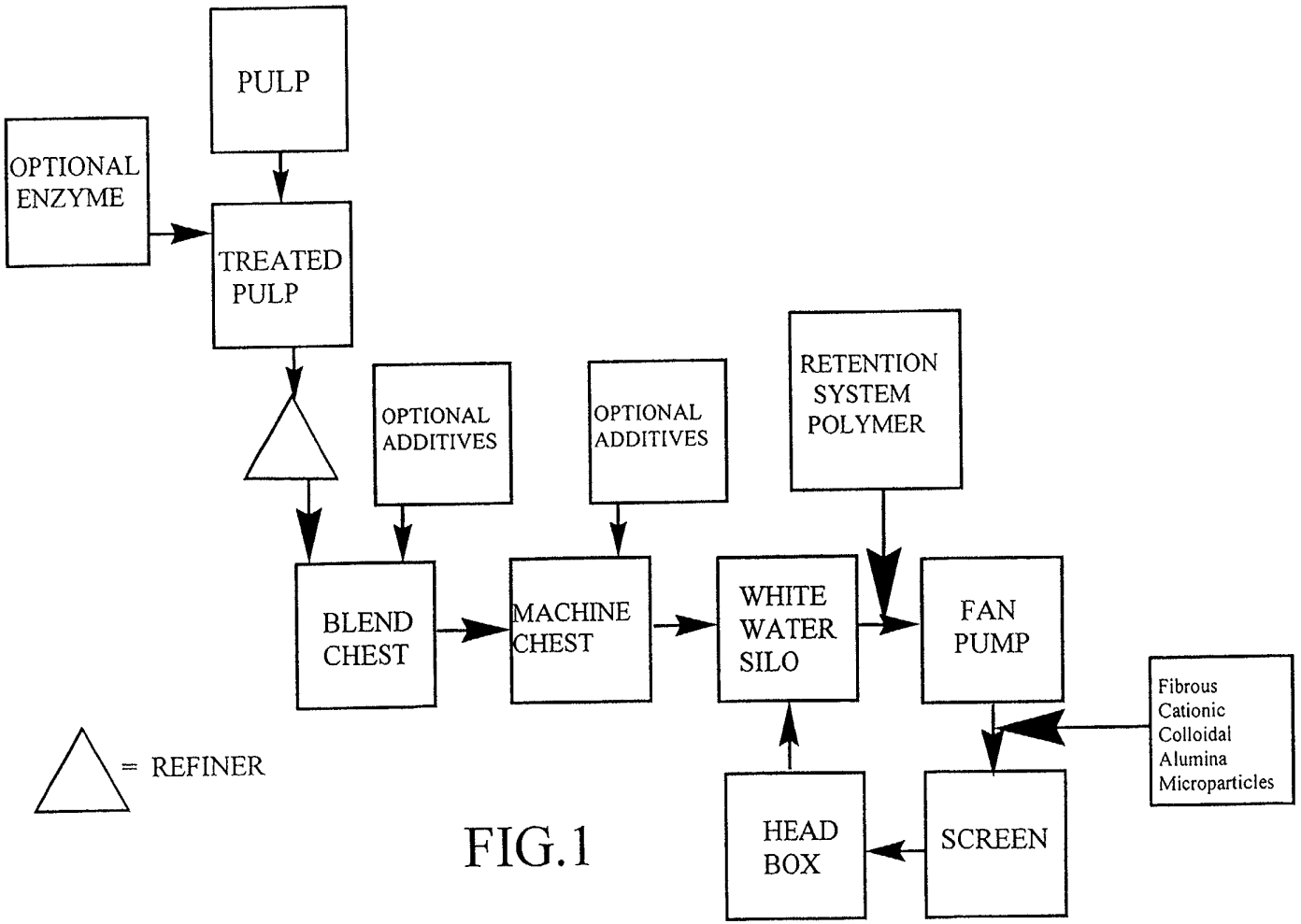

FIG.1

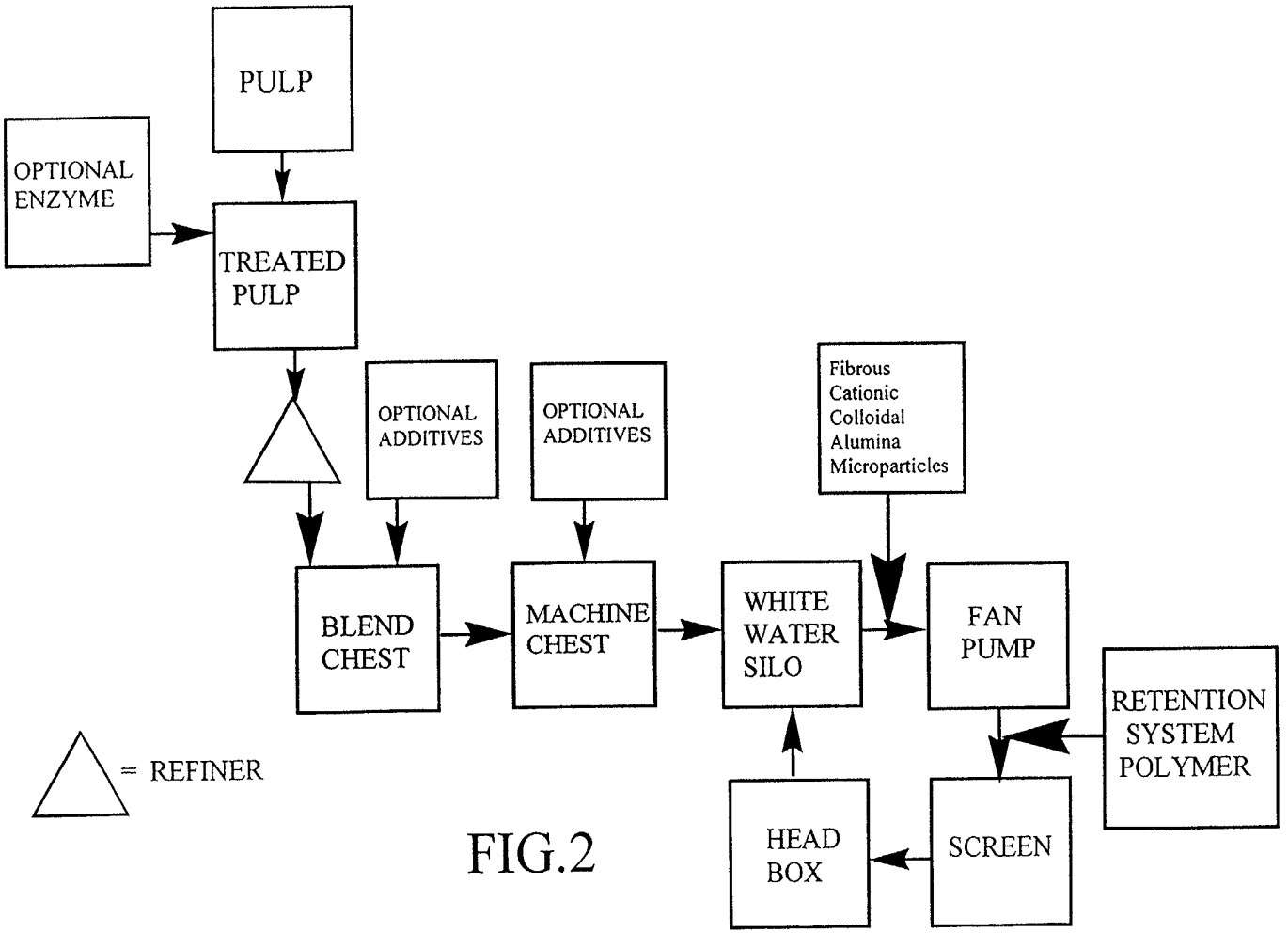
PULP
OPTIONAL ENZYME
TREATED PULP
OPTIONAL ADDITIVES
OPTIONAL ADDITIVES
Fibrous Cationic Colloidal Alumina Microparticles
BLEND CHEST
MACHINE CHEST
WHITE WATER SILO
FAN PUMP
RETENTION SYSTEM POLYMER
= REFINER
HEAD BOX
SCREEN

FIG.2

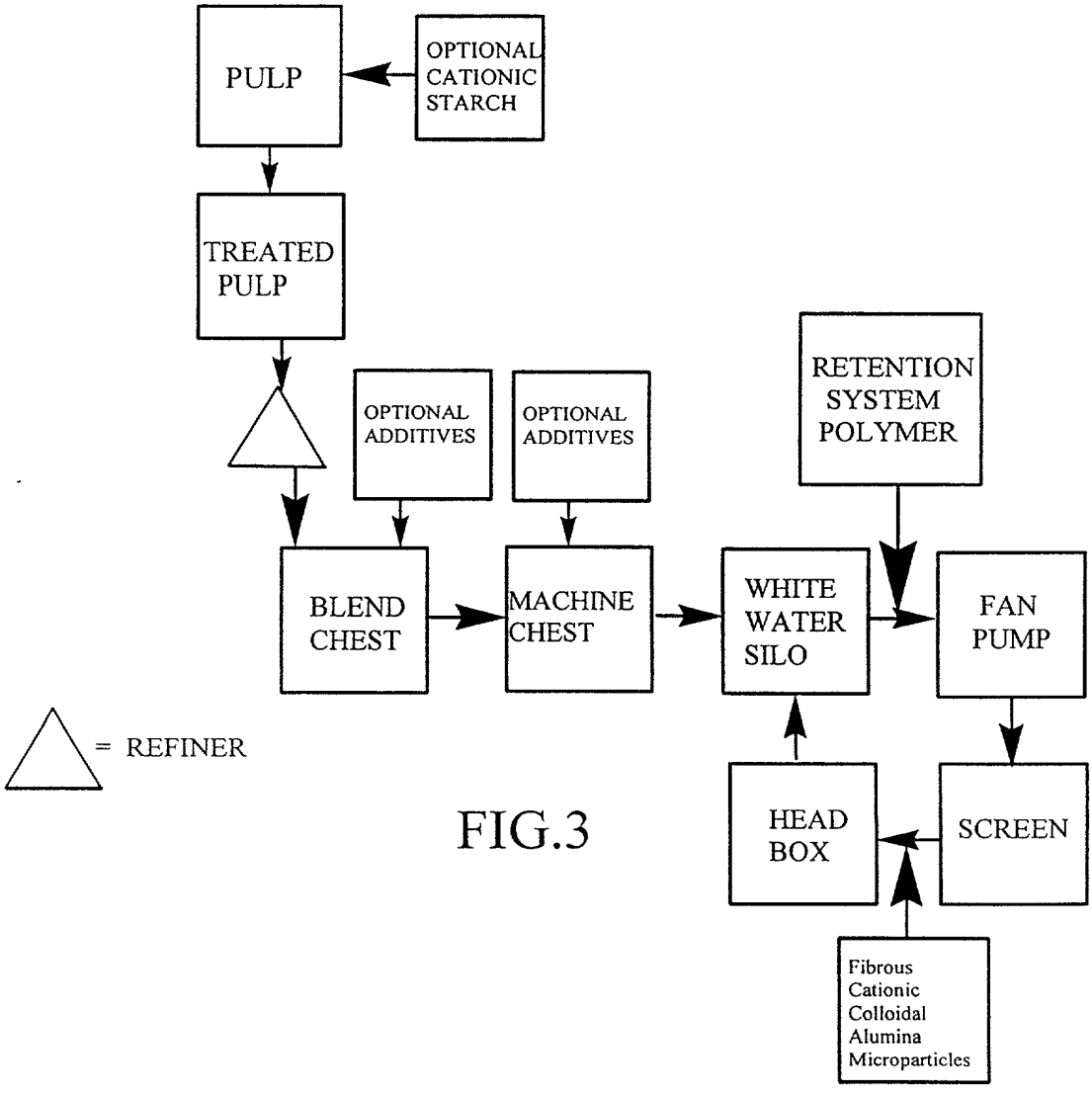
PULP
OPTIONAL CATIONIC STARCH
TREATED PULP
OPTIONAL ADDITIVES
OPTIONAL ADDITIVES
RETENTION SYSTEM POLYMER
BLEND CHEST
MACHINE CHEST
WHITE WATER SILO
FAN PUMP
= REFINER
HEAD BOX
SCREEN
Fibrous
Cationic
Colloidal
Alumina
Microparticles

FIG.3

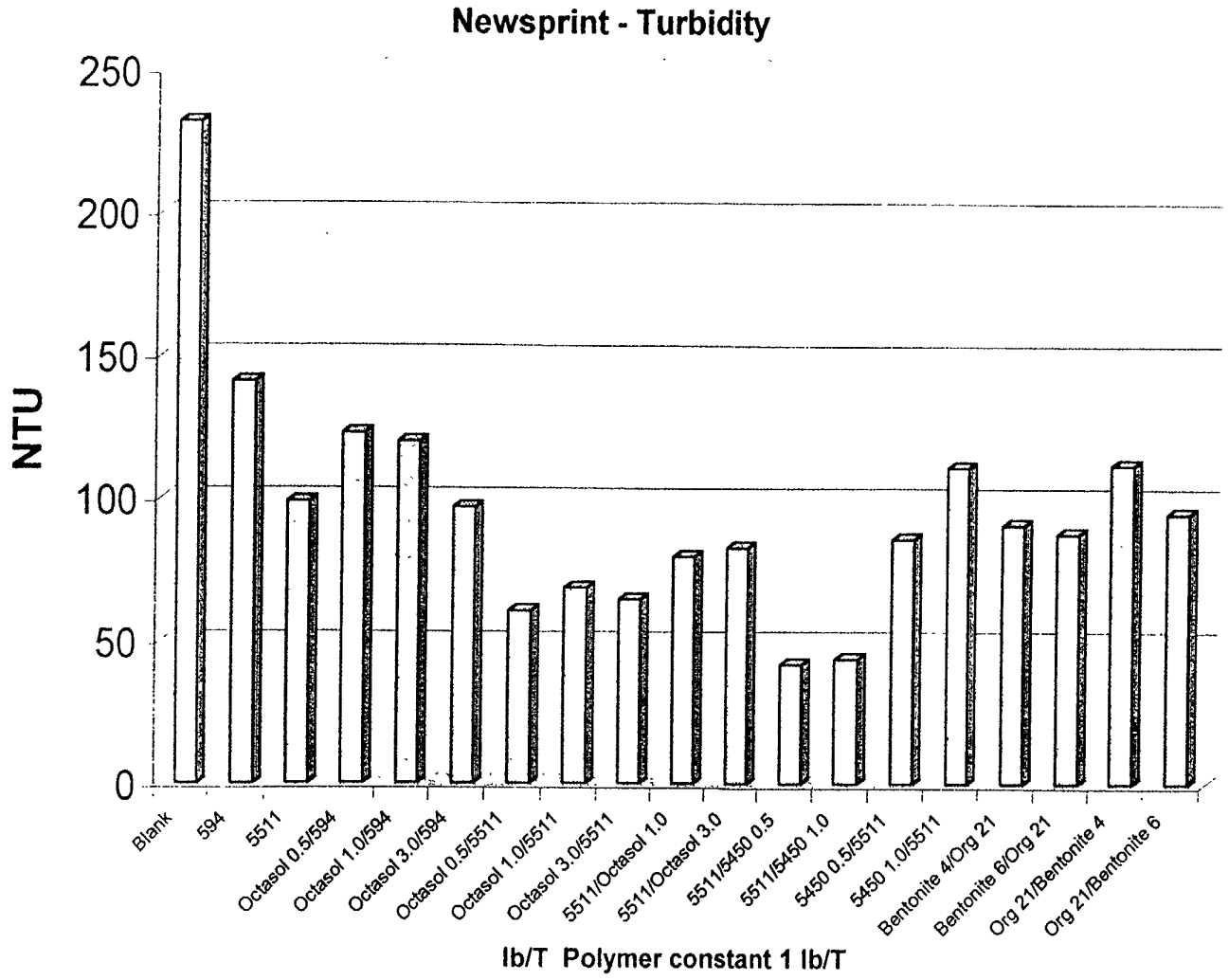
Newsprint - Turbidity
250
200
150
100
50
0
NTU
Blank
594
5511
Octasol 0.5/594
Octasol 1.0/594
Octasol 3.0/594
Octasol 0.5/5511
Octasol 1.0/5511
Octasol 3.0/5511
5511/Octasol 1.0
5511/Octasol 3.0
5511/5450 0.5
5511/5450 1.0
5450 0.5/5511
5450 1.0/5511
Bentonite 4/Org 21
Bentonite 6/Org 21
Org 21/Bentonite 4
Org 21/Bentonite 6
lb/T Polymer constant 1 lb/T

FIG. 4

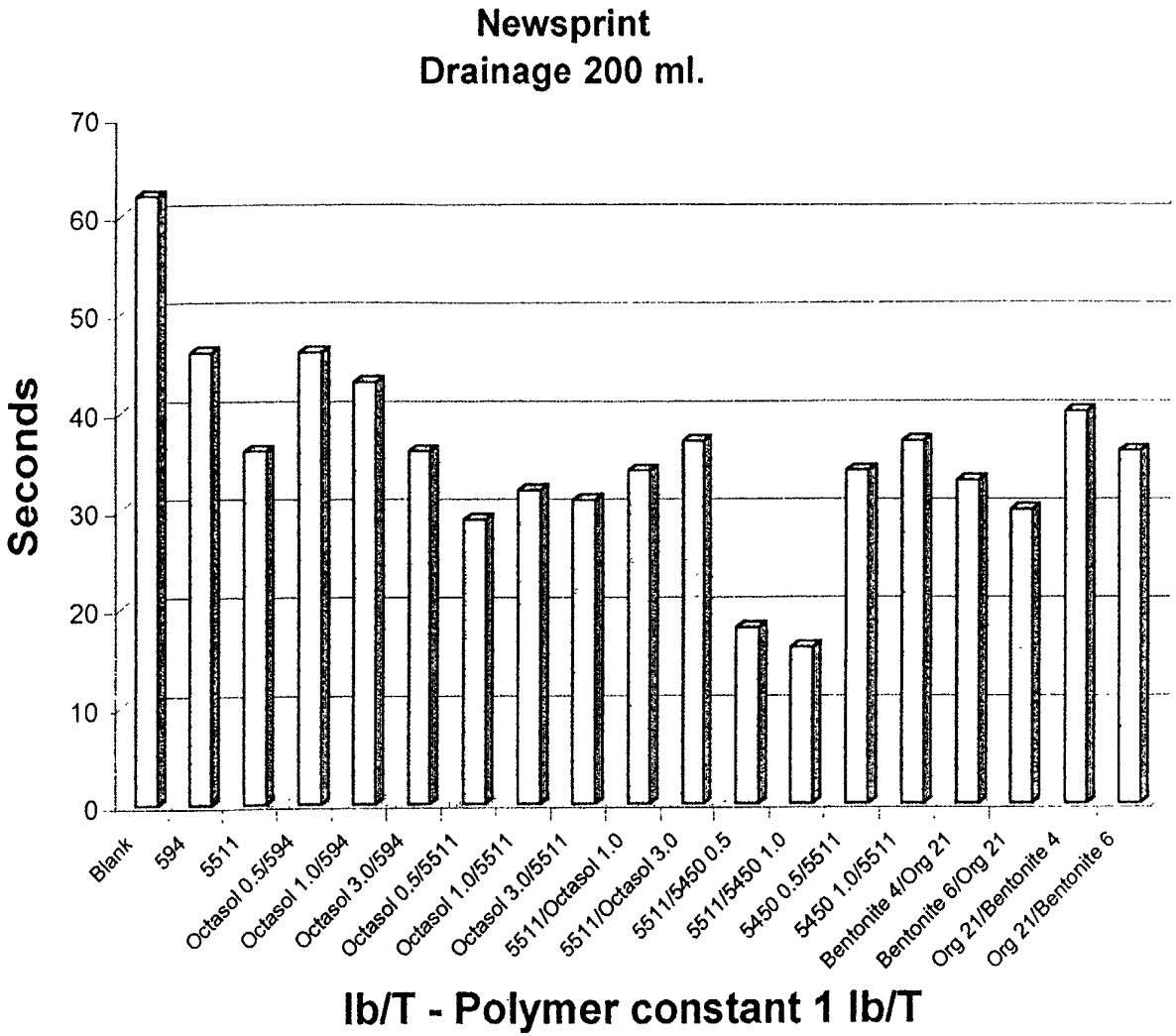
Newsprint
Drainage 200 ml.
Seconds
70
60
50
40
30
20
10
0
Blank
594
5511
Octasol 0.5/594
Octasol 1.0/594
Octasol 3.0/594
Octasol 0.5/5511
Octasol 1.0/5511
Octasol 3.0/5511
5511/Octasol 1.0
5511/Octasol 3.0
5511/5450 0.5
5511/5450 1.0
5450 0.5/5511
5450 1.0/5511
Bentonite 4/Org 21
Bentonite 6/Org 21
Org 21/Bentonite 4
Org 21/Bentonite 6
lb/T - Polymer constant 1 lb/T

FIG. 5

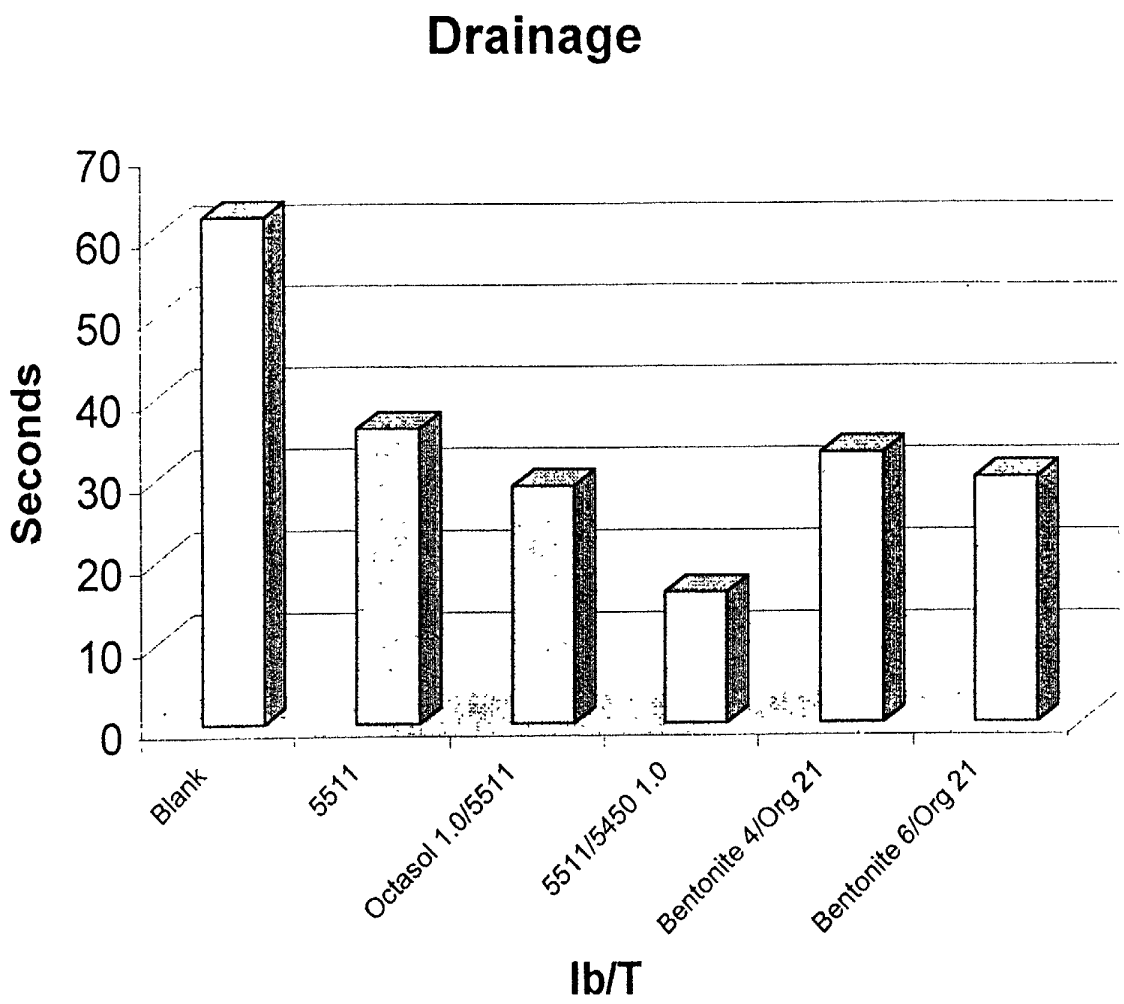

FIG. 6

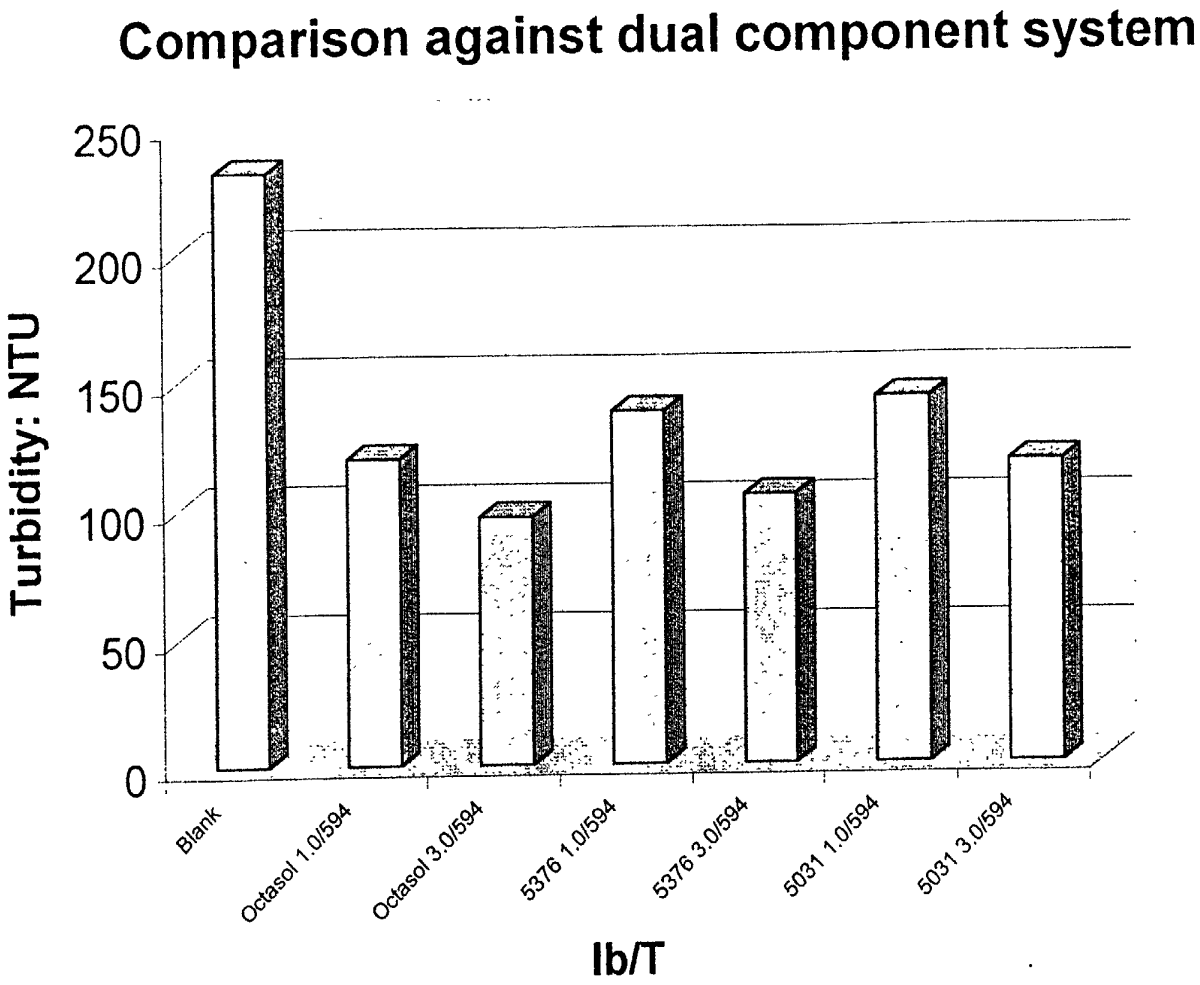

FIG. 7

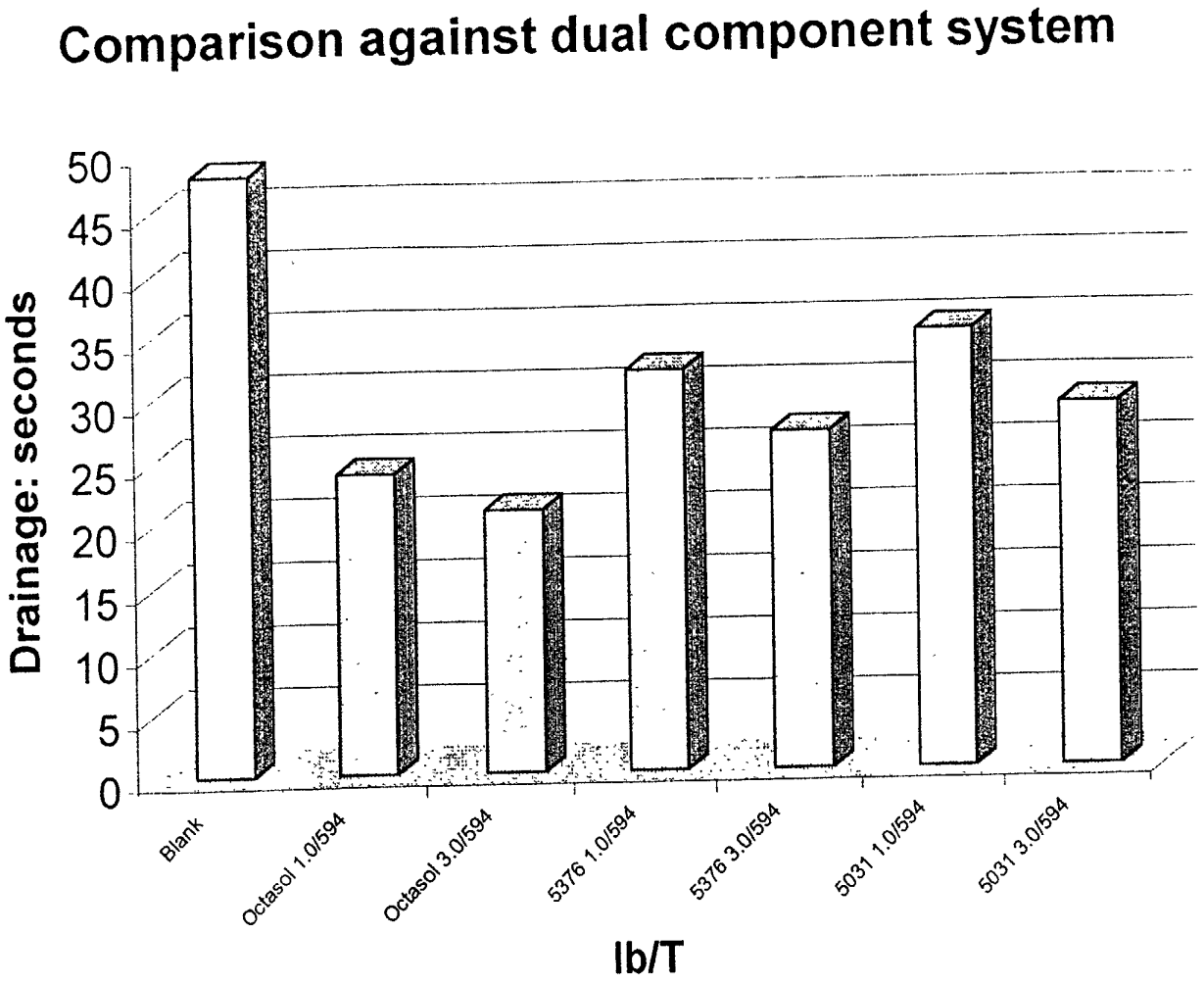
Comparison against dual component system
Drainage: seconds
50
45
40
35
30
25
20
15
10
5
0
Blank
Octasol 1.0/594
Octasol 3.0/594
5376 1.0/594
5376 3.0/594
5031 1.0/594
5031 3.0/594
lb/T

FIG. 8

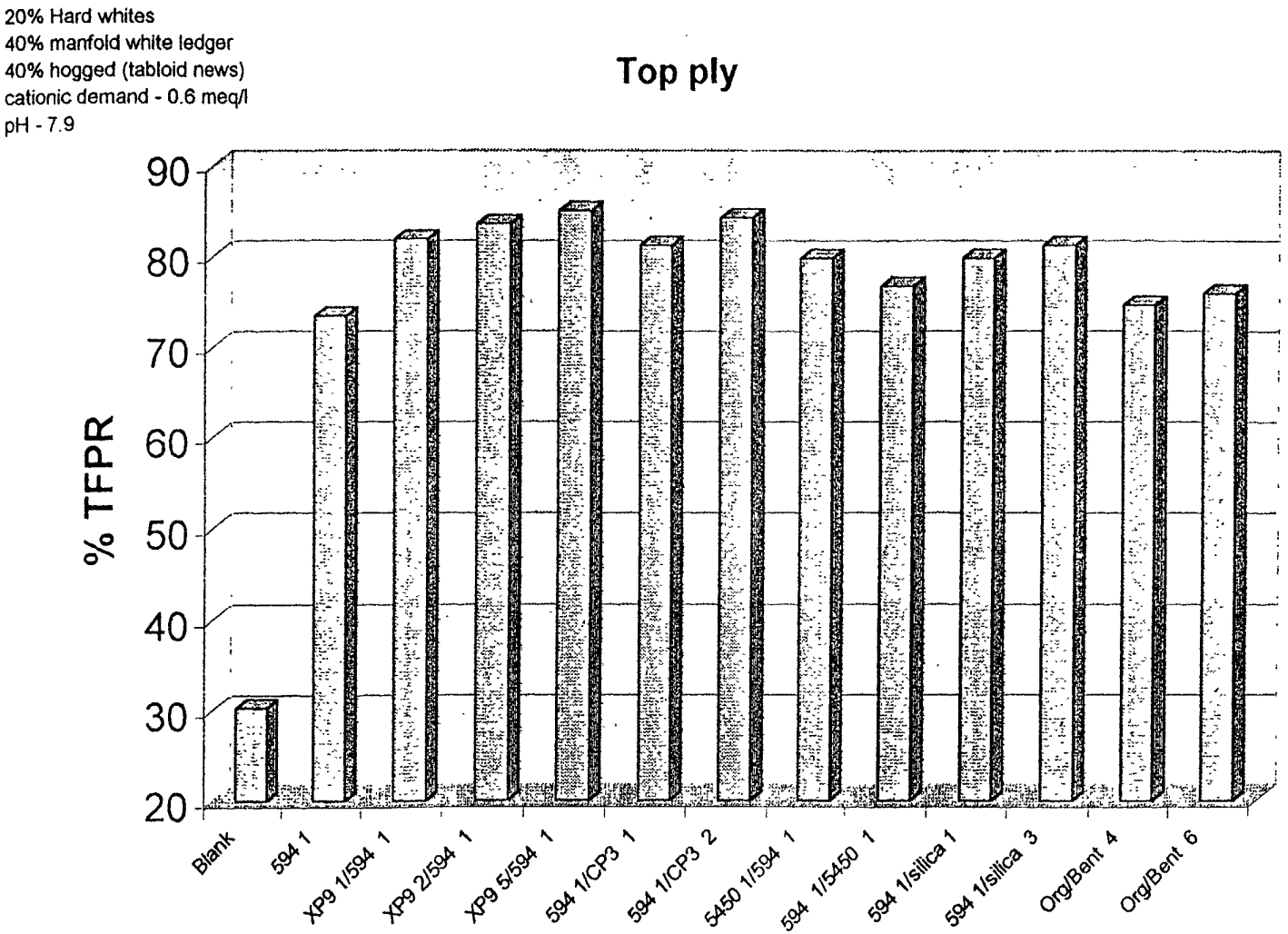
20% Hard whites
40% manfold white ledger
40% hogged (tabloid news)
cationic demand - 0.6 meq/l
pH - 7.9
Top ply
% TFPR
90
80
70
60
50
40
30
20
Blank
594 1
XP9 1/594 1
XP9 2/594 1
XP9 5/594 1
594 1/CP3 1
594 1/CP3 2
5450 1/594 1
594 1/5450 1
594 1/silica 1
594 1/silica 3
Org/Bent 4
Org/Bent 6

FIG. 9

20% Hard whites
40% manfold white ledger
40% hogged (tabloid news)
cationic demand - 0.6 meq/l
pH - 7 9

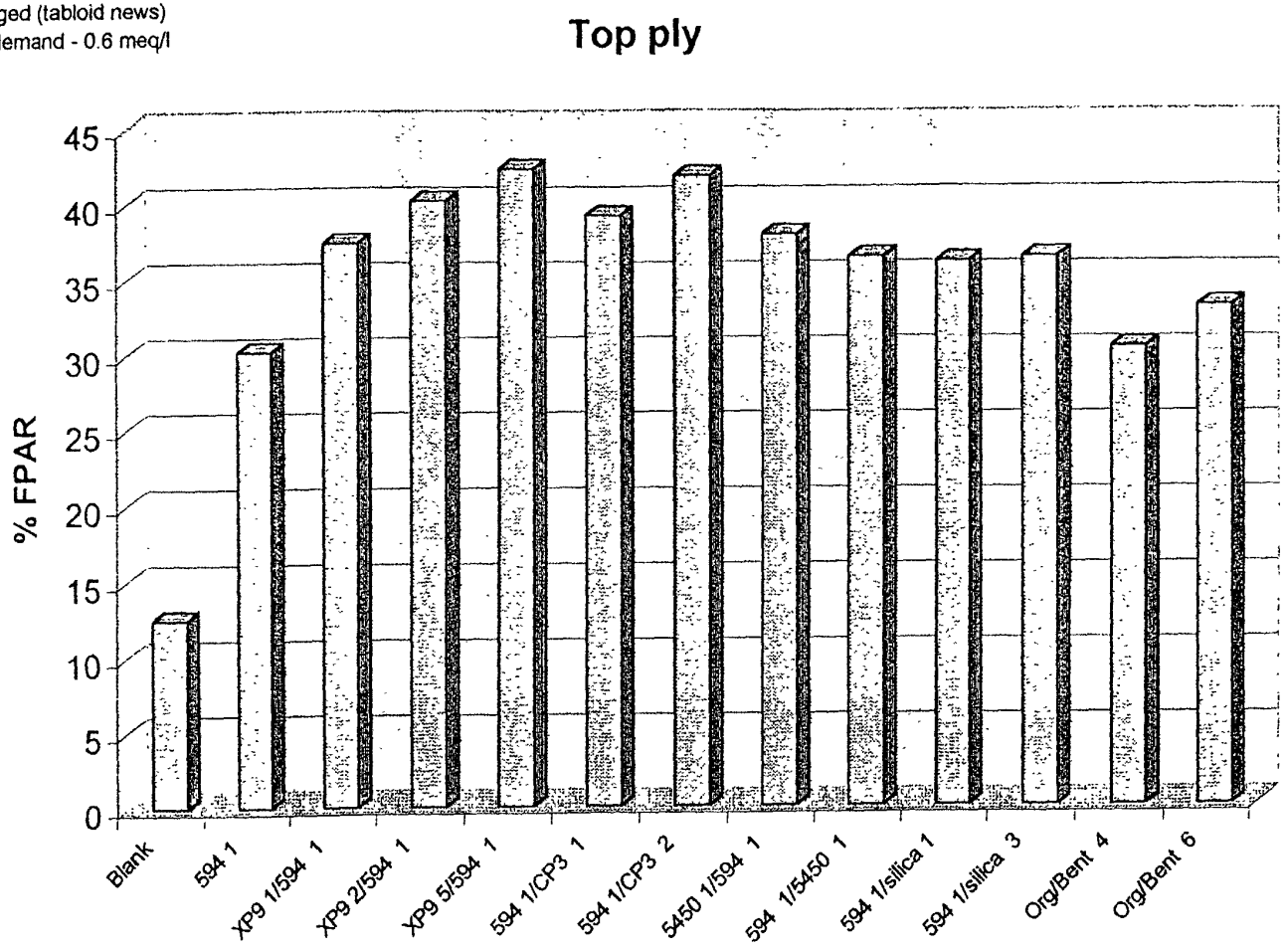

FIG. 10

30% Corrugated
60% box
10% ONP
pH - 7.4
Cationic demand - .4 meq/L

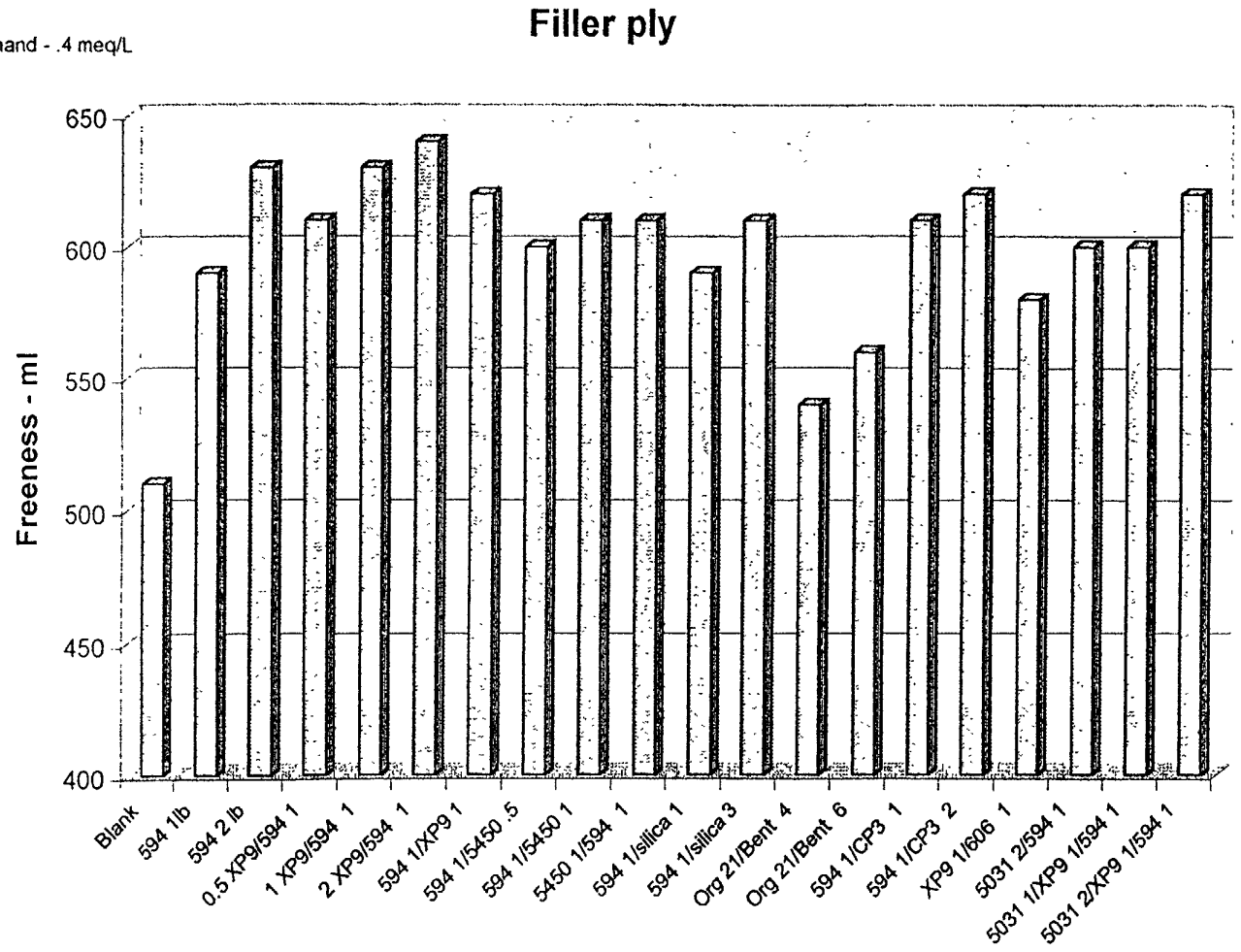

FIG. 11

100% ONP
pH -7 85
Cationic demand- .55 meq/L

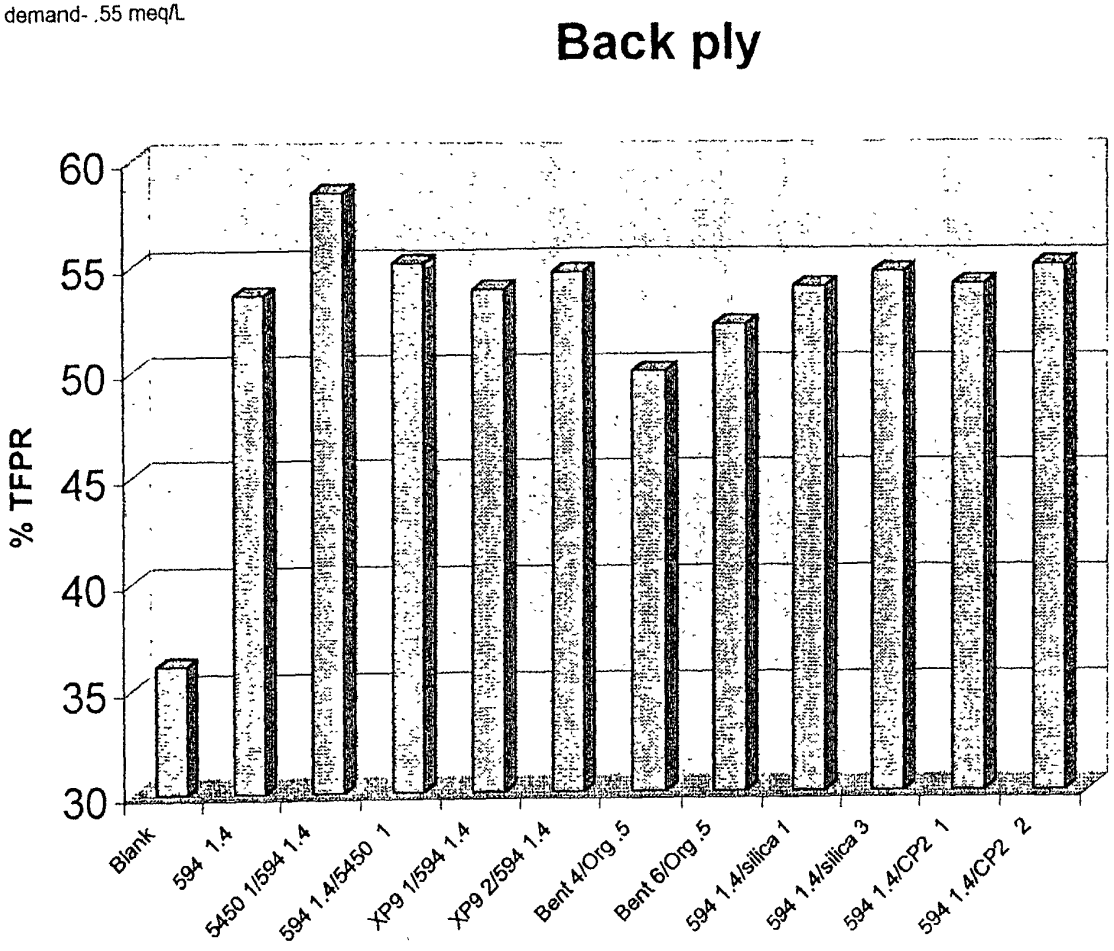

FIG. 12

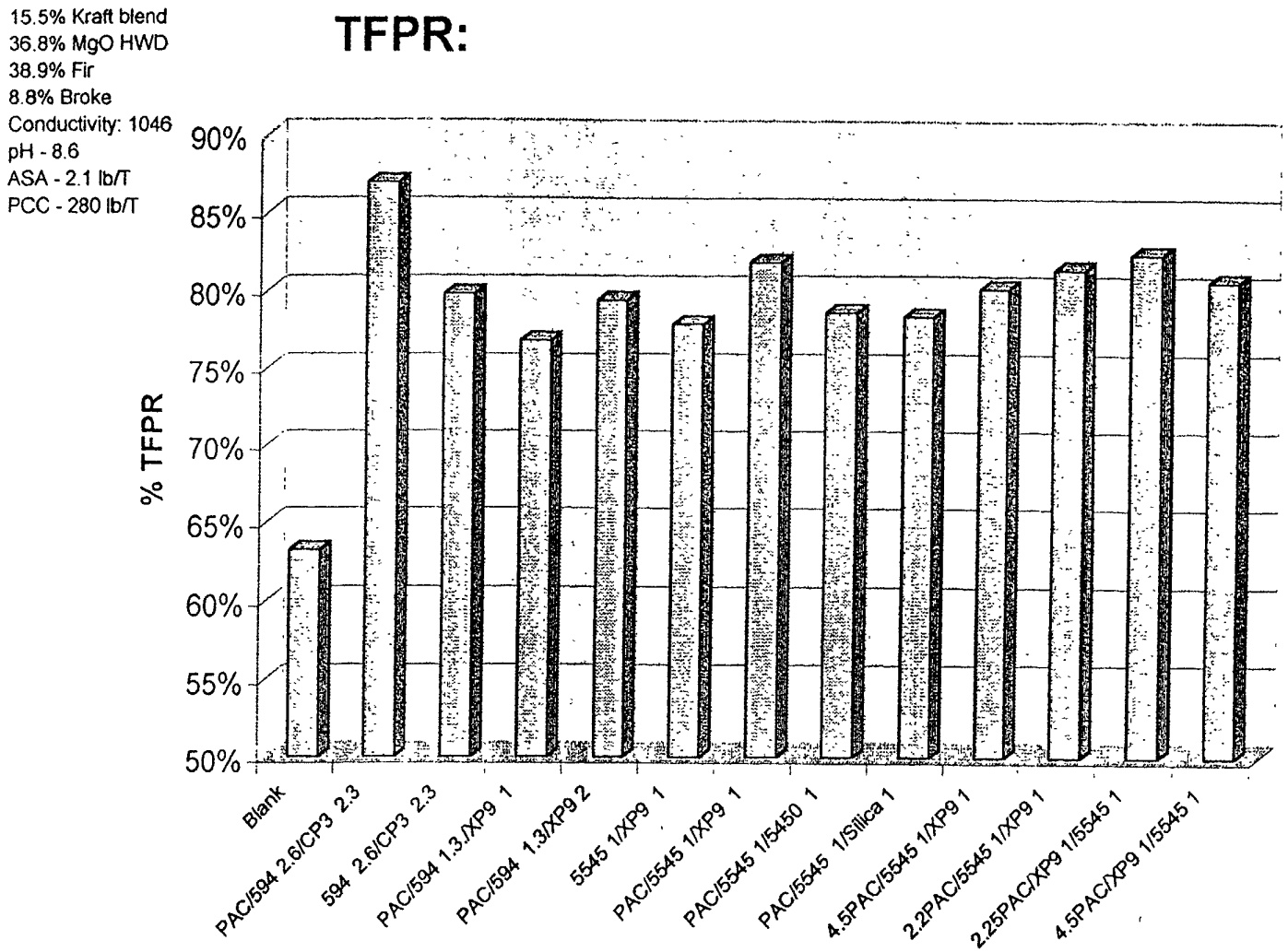
15.5% Kraft blend
36.8% MgO HWD
38.9% Fir
8.8% Broke
Conductivity: 1046
pH - 8.6
ASA - 2.1 lb/T
PCC - 280 lb/T
TFPR:
% TFPR
90%
85%
80%
75%
70%
65%
60%
55%
50%
Blank
PAC/594 2.6/CP3 2.3
594 2.6/CP3 2.3
PAC/594 1.3/XP9 1
PAC/594 1.3/XP9 2
5545 1/XP9 1
PAC/5545 1/XP9 1
PAC/5545 1/5450 1
PAC/5545 1/Silica 1
4.5PAC/5545 1/XP9 1
2.2PAC/5545 1/XP9 1
2.25PAC/XP9 1/5545 1
4.5PAC/XP9 1/5545 1

FIG. 13

15.5% Kraft blend
36.8% MgO HWD
38.9% Fir
8.8% Broke
Conductivity: 1046
pH - 8.6
ASA - 2.1 lb/T
PCC - 280 lb/T

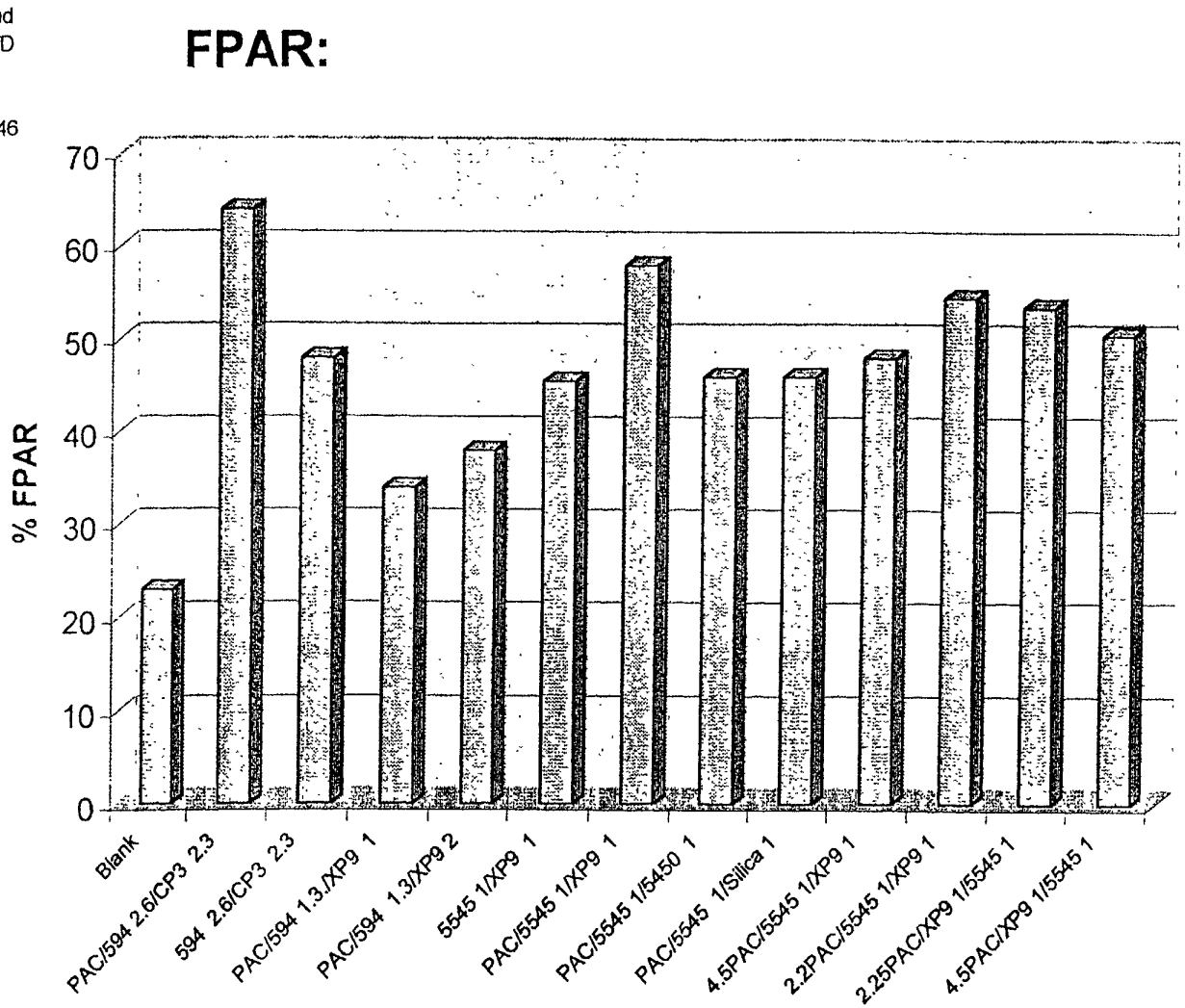

FIG. 14

15.5% Kraft Blend
36.8% MgO HWD
38.9% Fir
8.8% Broke
PCC - 280 lb/T
ASA - 2.1 lb/T
Conductivity 1005
pH - 8.3

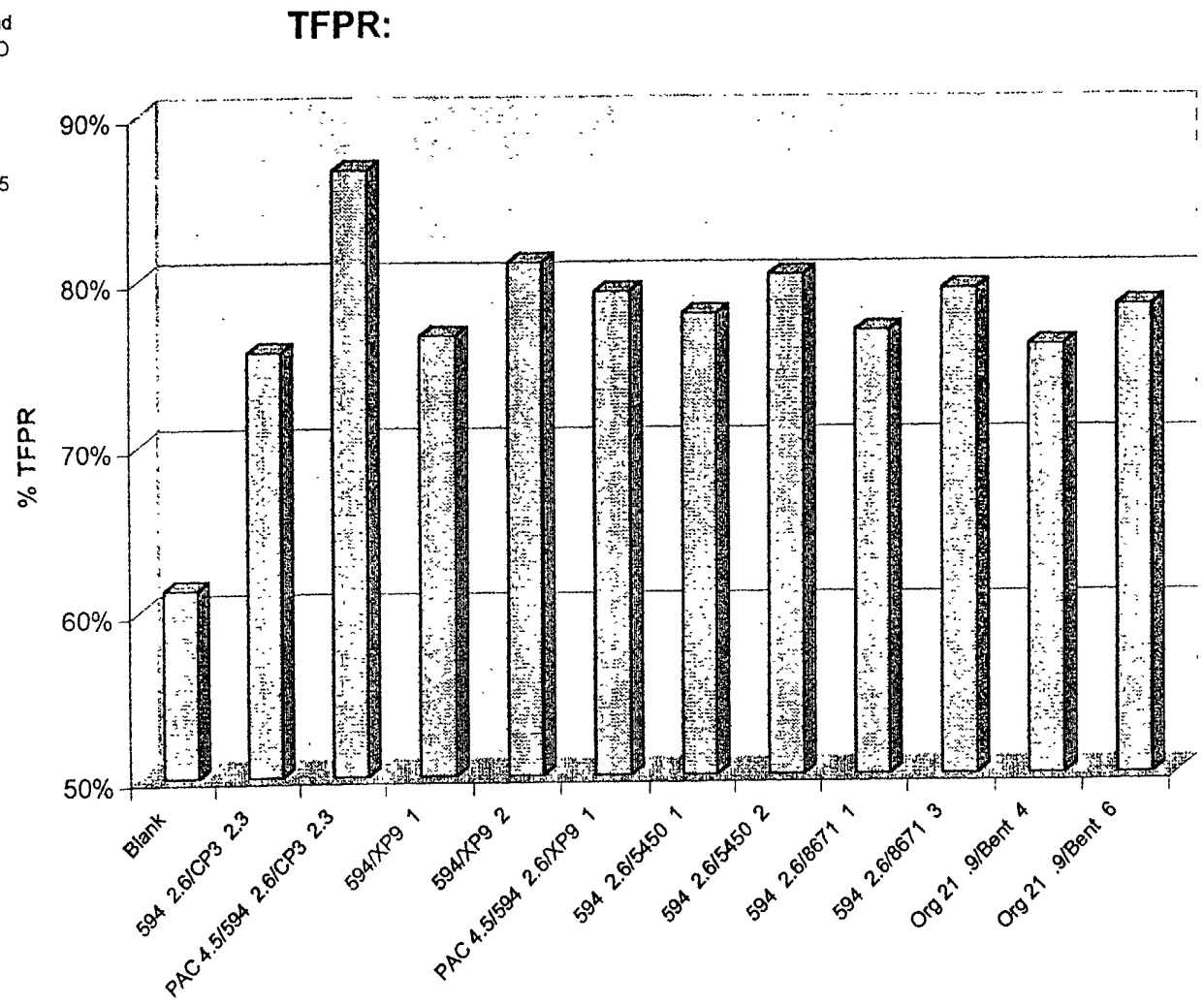

FIG. 15

15.5% Kraft Blend
36.8% MgO HWD
38.9% Fir
8.8% Broke
PCC - 280 lb/T
ASA - 2.1 lb/T
Conductivity 1005
pH - 8.3

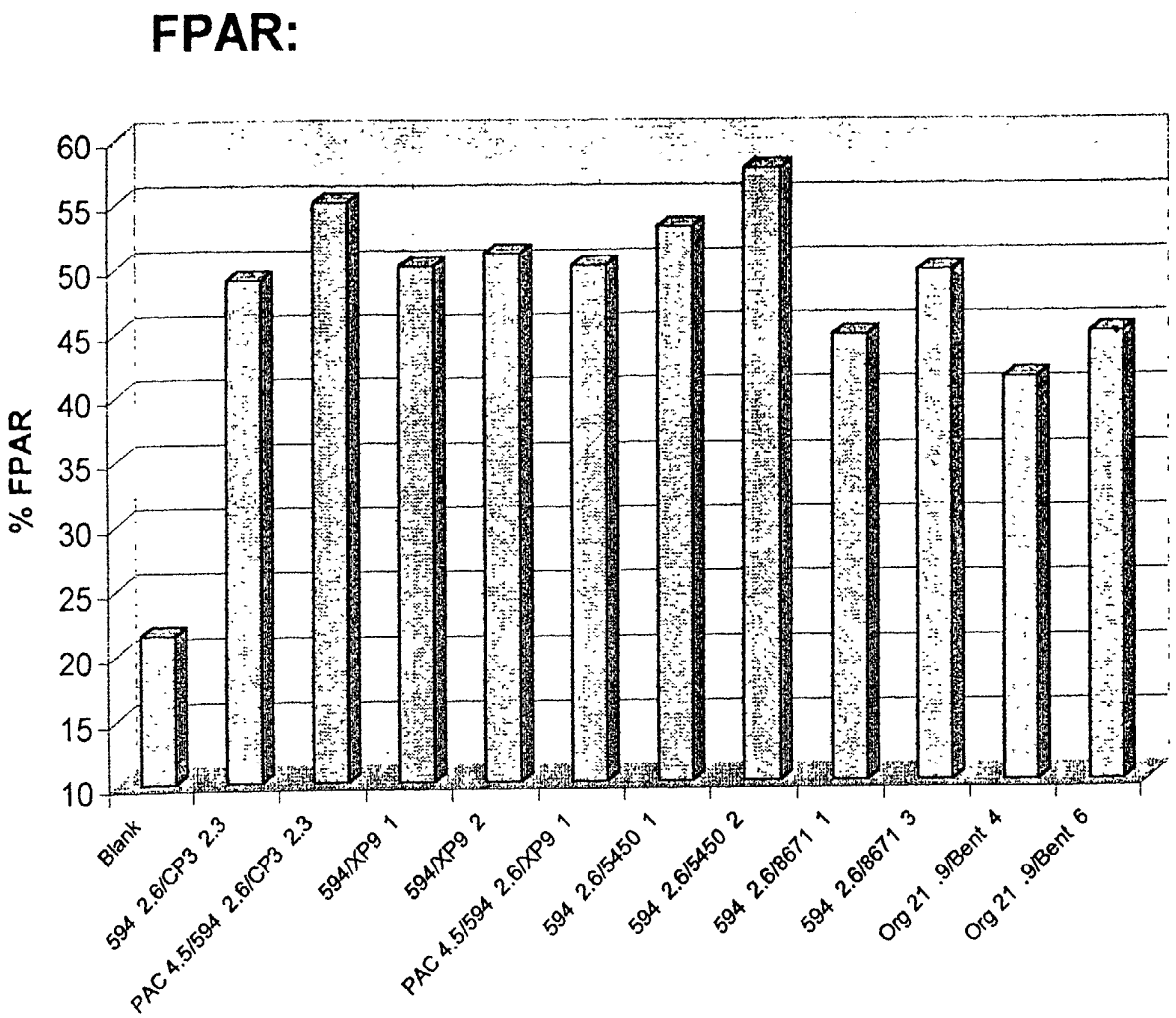

FIG. 16

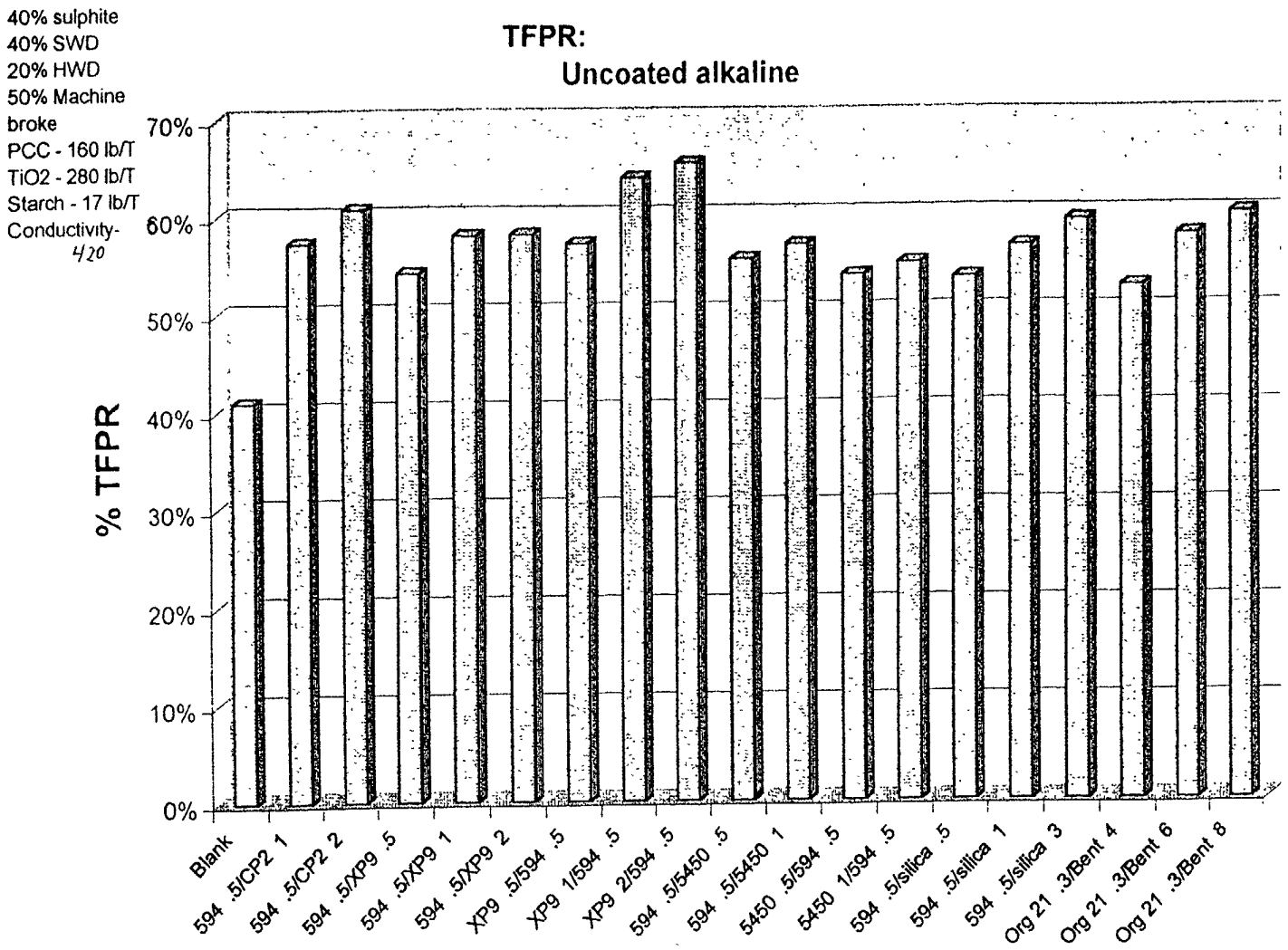
40% sulphite
40% SWD
20% HWD
50% Machine broke
PCC - 160 lb/T
TiO2 - 280 lb/T
Starch - 17 lb/T
Conductivity- 4/20
TFPR:
Uncoated alkaline
% TFPR
70%
60%
50%
40%
30%
20%
10%
0%
Blank
594 .5/CP2 1
594 .5/CP2 2
594 .5/XP9 .5
594 .5/XP9 1
594 .5/XP9 2
XP9 .5/594 .5
XP9 1/594 .5
XP9 2/594 .5
594 .5/5450 .5
594 .5/5450 1
5450 .5/594 .5
5450 1/594 .5
594 .5/silica .5
594 .5/silica 1
594 .5/silica 3
Org 21 .3/Bent 4
Org 21 .3/Bent 6
Org 21 .3/Bent 8

FIG. 17

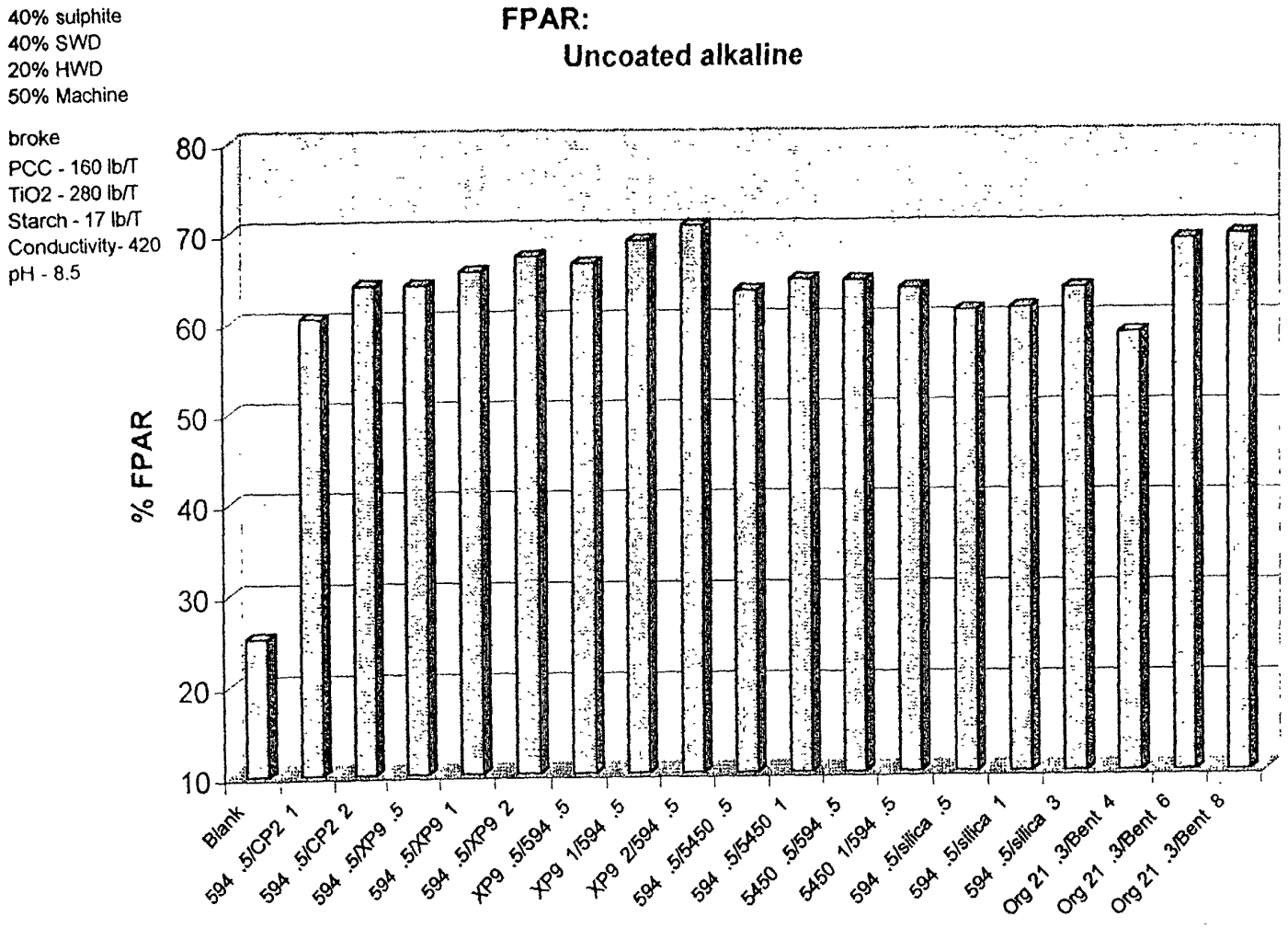
40% sulphite
40% SWD
20% HWD
50% Machine
broke
PCC - 160 lb/T
TiO2 - 280 lb/T
Starch - 17 lb/T
Conductivity- 420
pH - 8.5
FPAR:
Uncoated alkaline
% FPAR
80
70
60
50
40
30
20
10
Blank
594 .5/CP2 1
594 .5/CP2 2
594 .5/XP9 .5
594 .5/XP9 1
594 .5/XP9 2
XP9 .5/594 .5
XP9 1/594 .5
XP9 2/594 .5
594 .5/5450 .5
594 .5/5450 1
5450 .5/594 .5
5450 1/594 .5
594 .5/silica .5
594 .5/silica 1
594 .5/silica 3
Org 21 .3/Bent 4
Org 21 .3/Bent 6
Org 21 .3/Bent 8

FIG. 18

40% GWD
47% Sulphite
13% SWD
15% Machine broke
20% Coated broke
Filler - 15lb/t
Starch - 25 lb/t
Alum - 6 lb/t
Conductivity - 1700
pH - 6.2
Charge- .085 meq/L

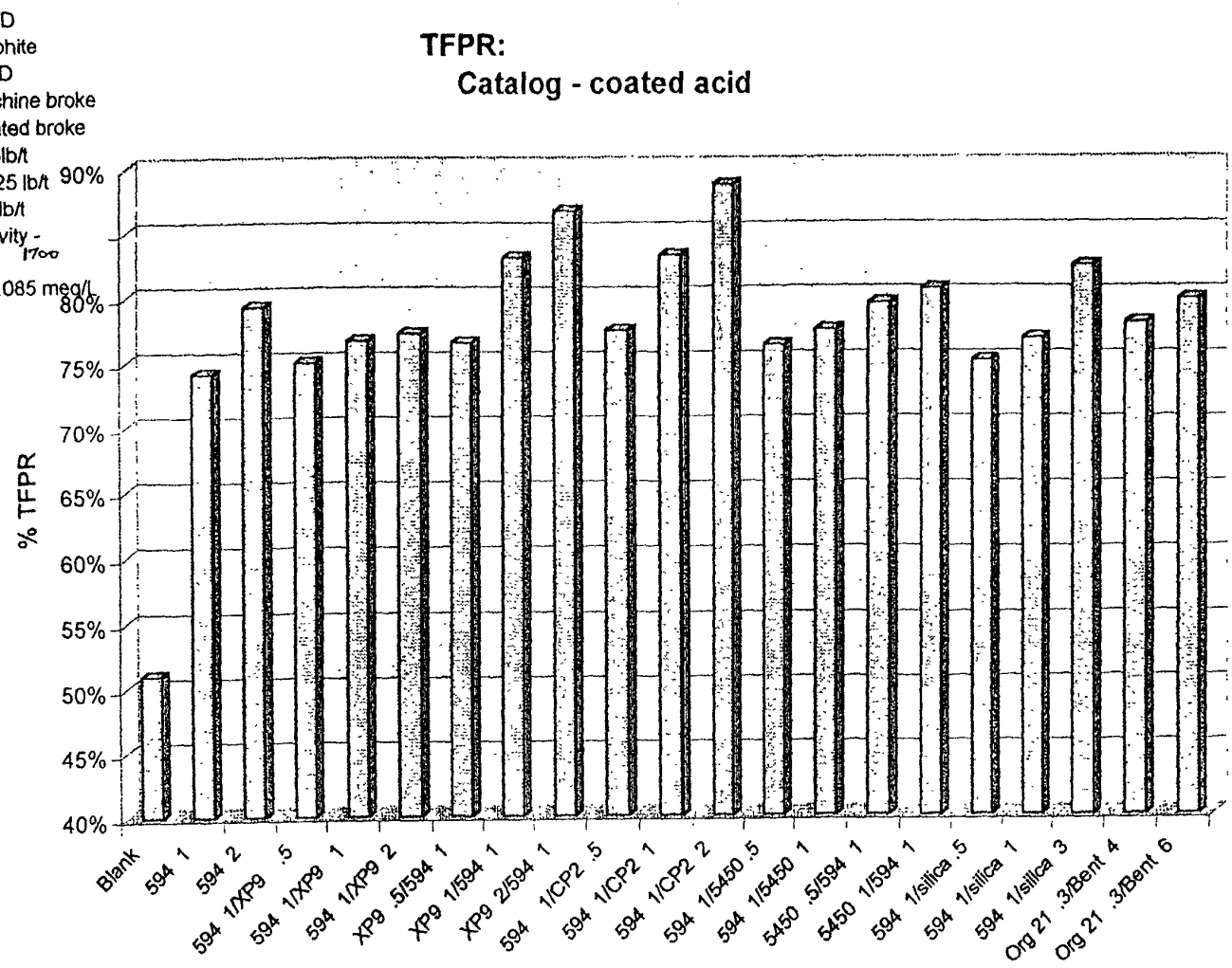

FIG. 19

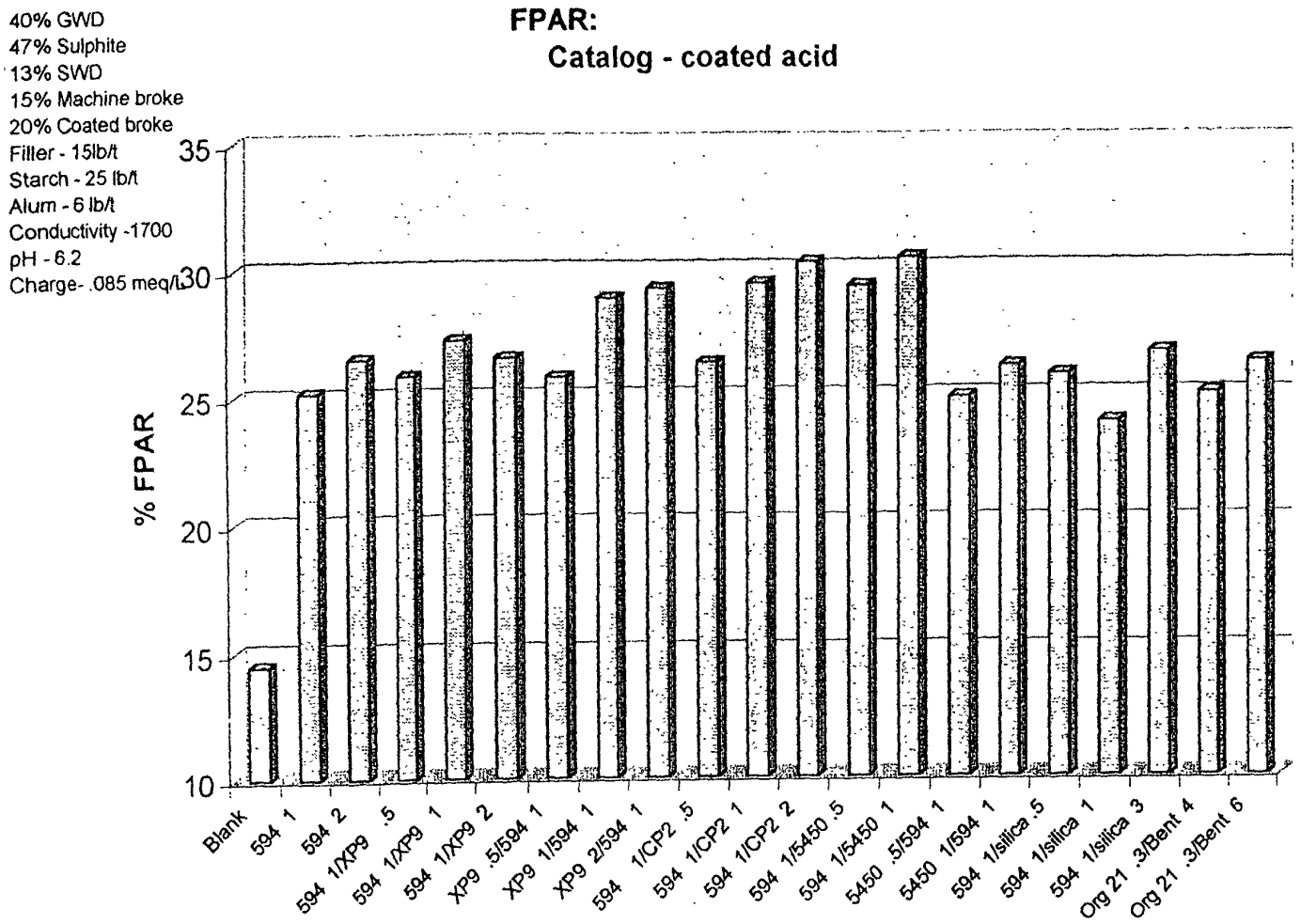
40% GWD
47% Sulphite
13% SWD
15% Machine broke
20% Coated broke
Filler - 15lb/t
Starch - 25 lb/t
Alum - 6 lb/t
Conductivity -1700
pH - 6.2
Charge- .085 meq/l
FPAR:
Catalog - coated acid
% FPAR
35
30
25
20
15
10
Blank
594 1
594 2
594 1/XP9 .5
594 1/XP9 1
594 1/XP9 2
XP9 .5/594 1
XP9 1/594 1
XP9 2/594 1
594 1/CP2 .5
594 1/CP2 1
594 1/CP2 2
594 1/5450 .5
594 1/5450 1
5450 .5/594 1
5450 1/594 1
594 1/silica .5
594 1/silica 1
594 1/silica 3
Org 21 .3/Bent 4
Org 21 .3/Bent 6

FIG. 20

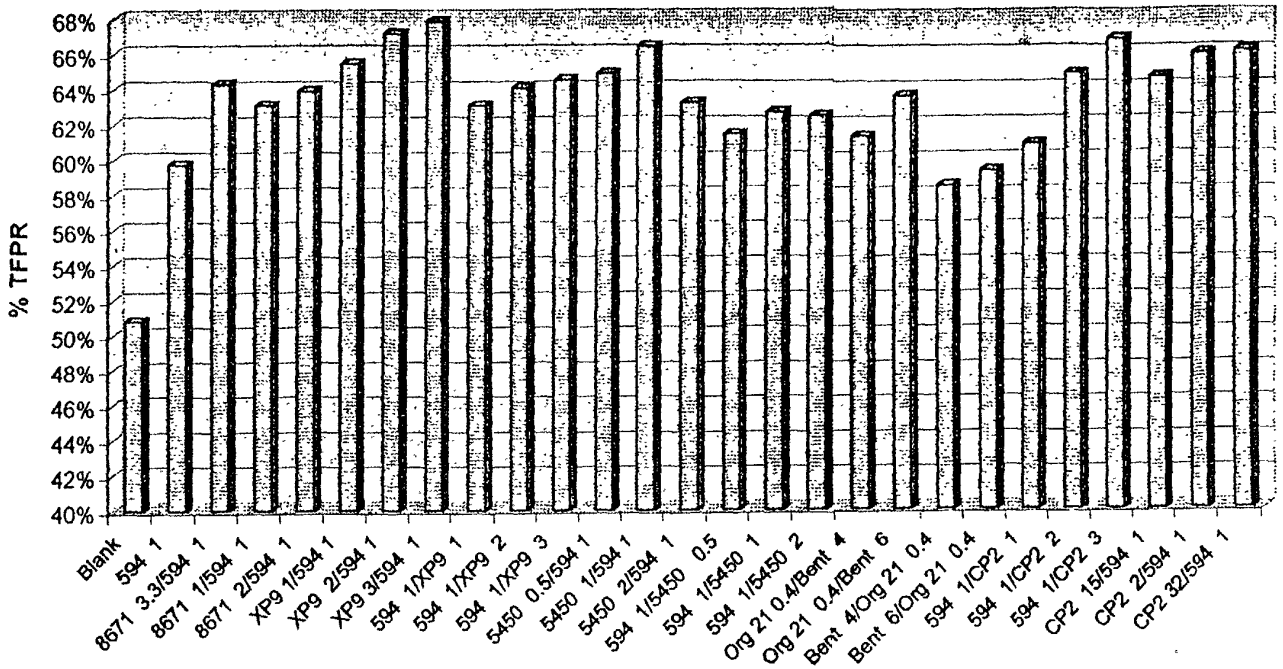

FIG. 21

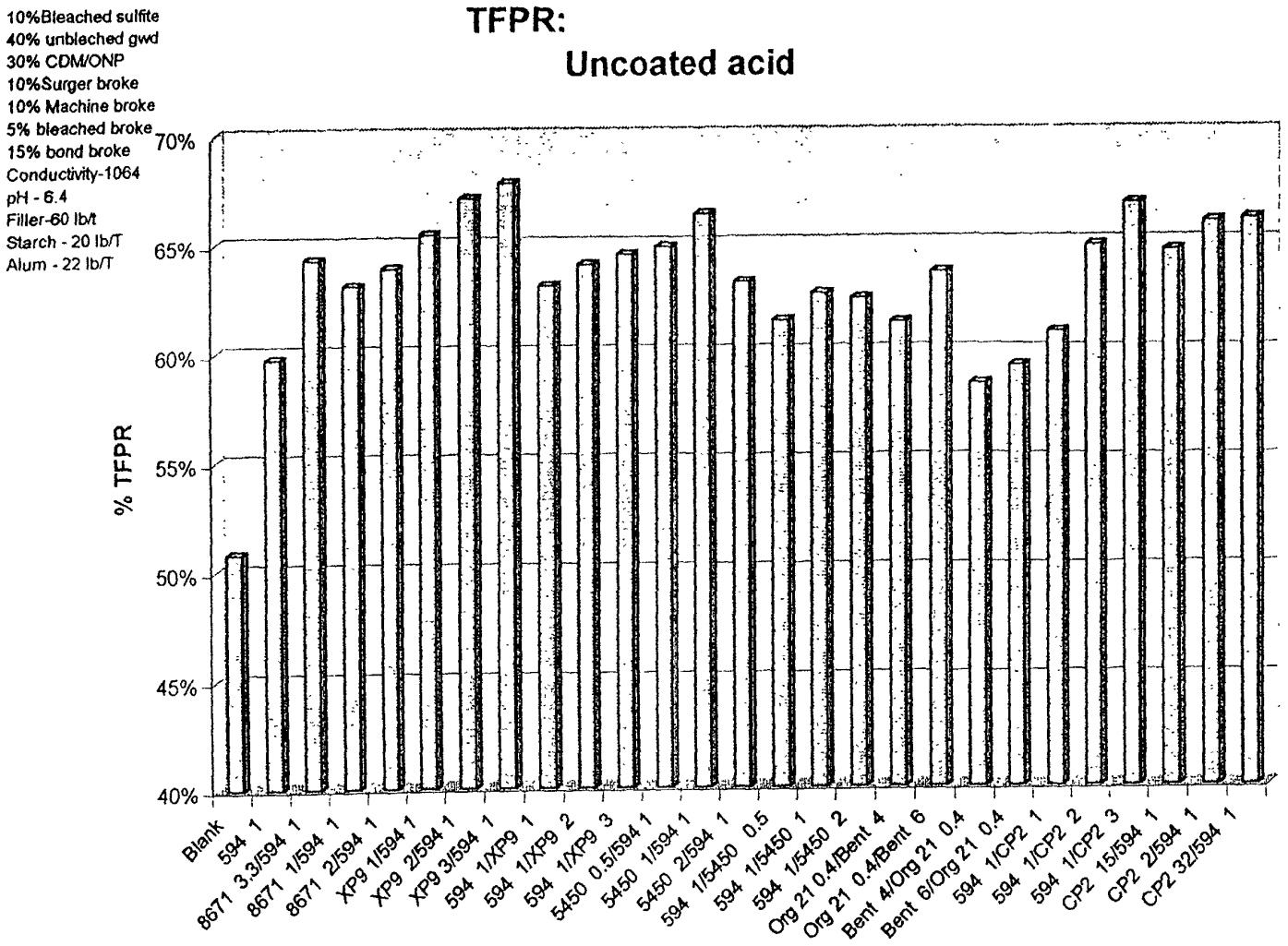

FIG. 22

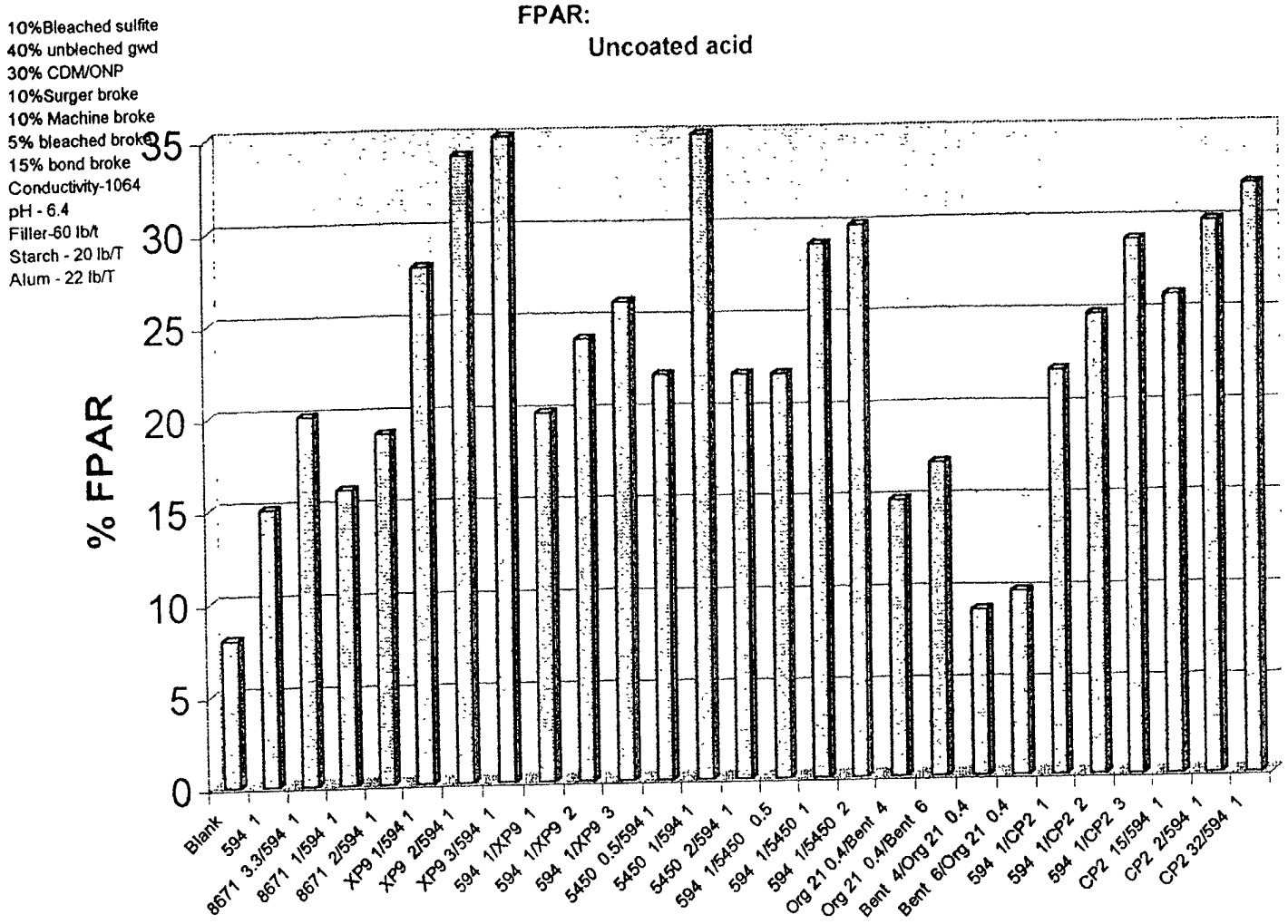

FIG. 23

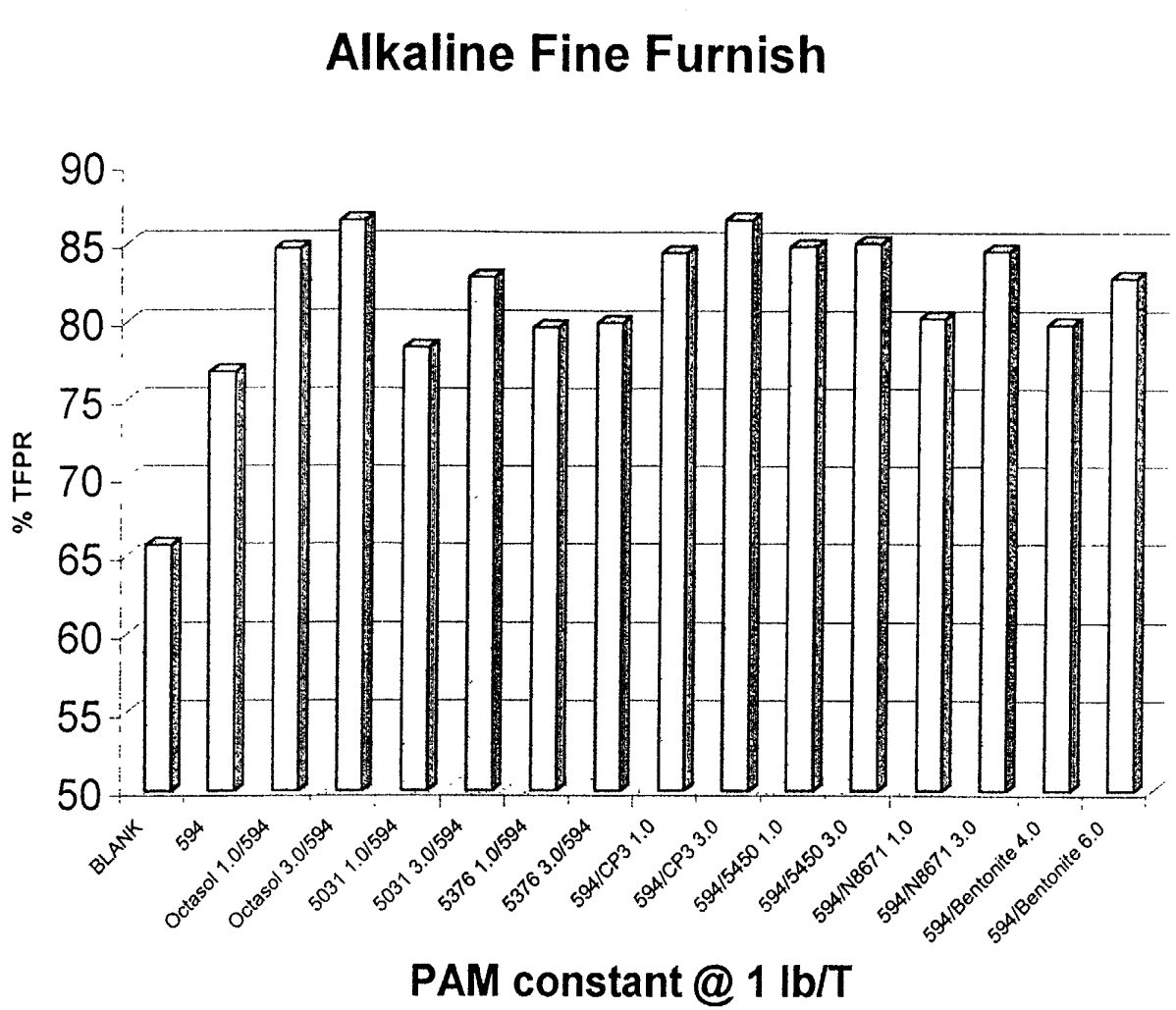
Alkaline Fine Furnish
% TFPR
90
85
80
75
70
65
60
55
50
BLANK
594
Octasol 1.0/594
Octasol 3.0/594
5031 1.0/594
5031 3.0/594
5376 1.0/594
5376 3.0/594
594/CP3 1.0
594/CP3 3.0
594/5450 1.0
594/5450 3.0
594/N8671 1.0
594/N8671 3.0
594/Bentonite 4.0
594/Bentonite 6.0
PAM constant @ 1 lb/T

FIG. 24

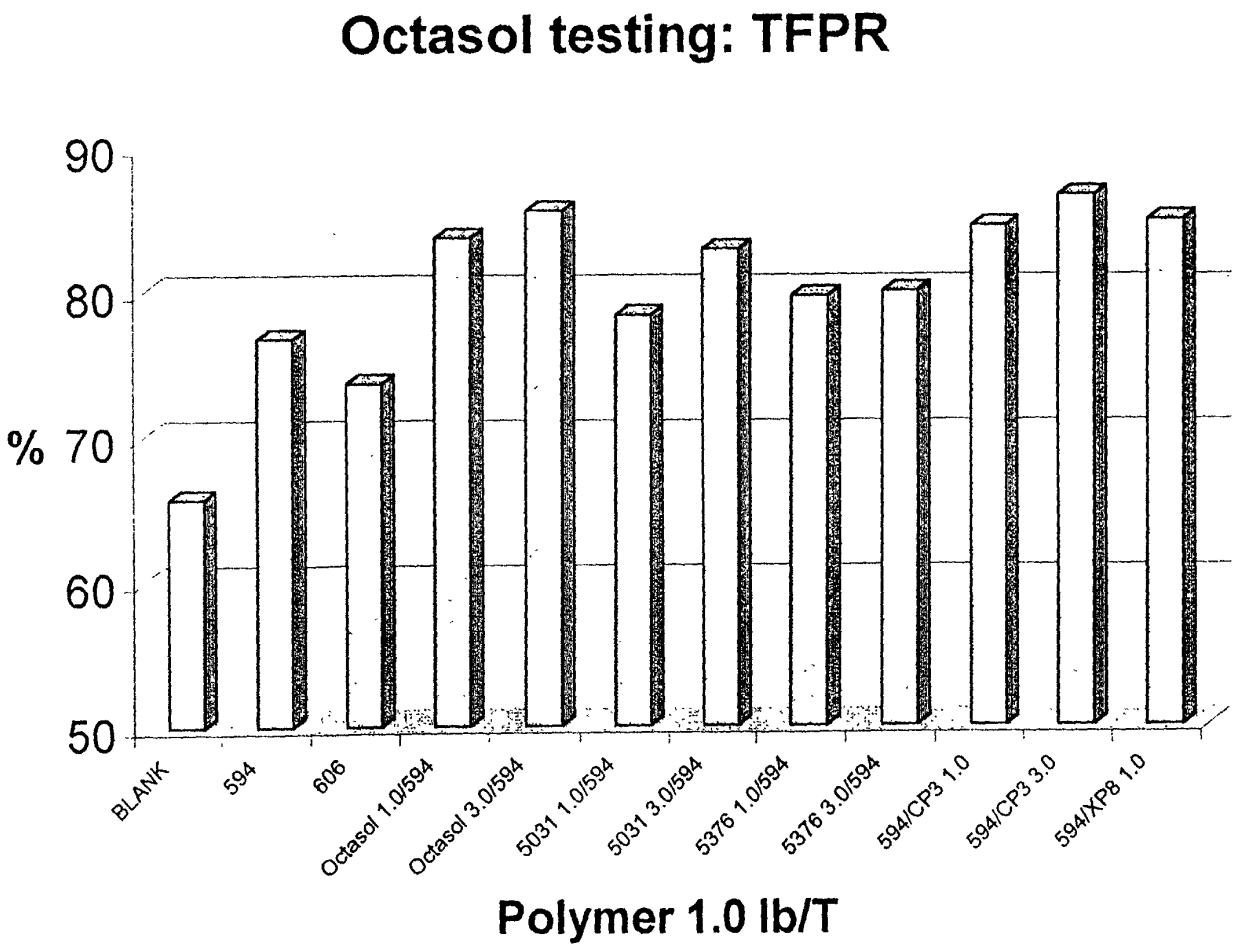

FIG. 25

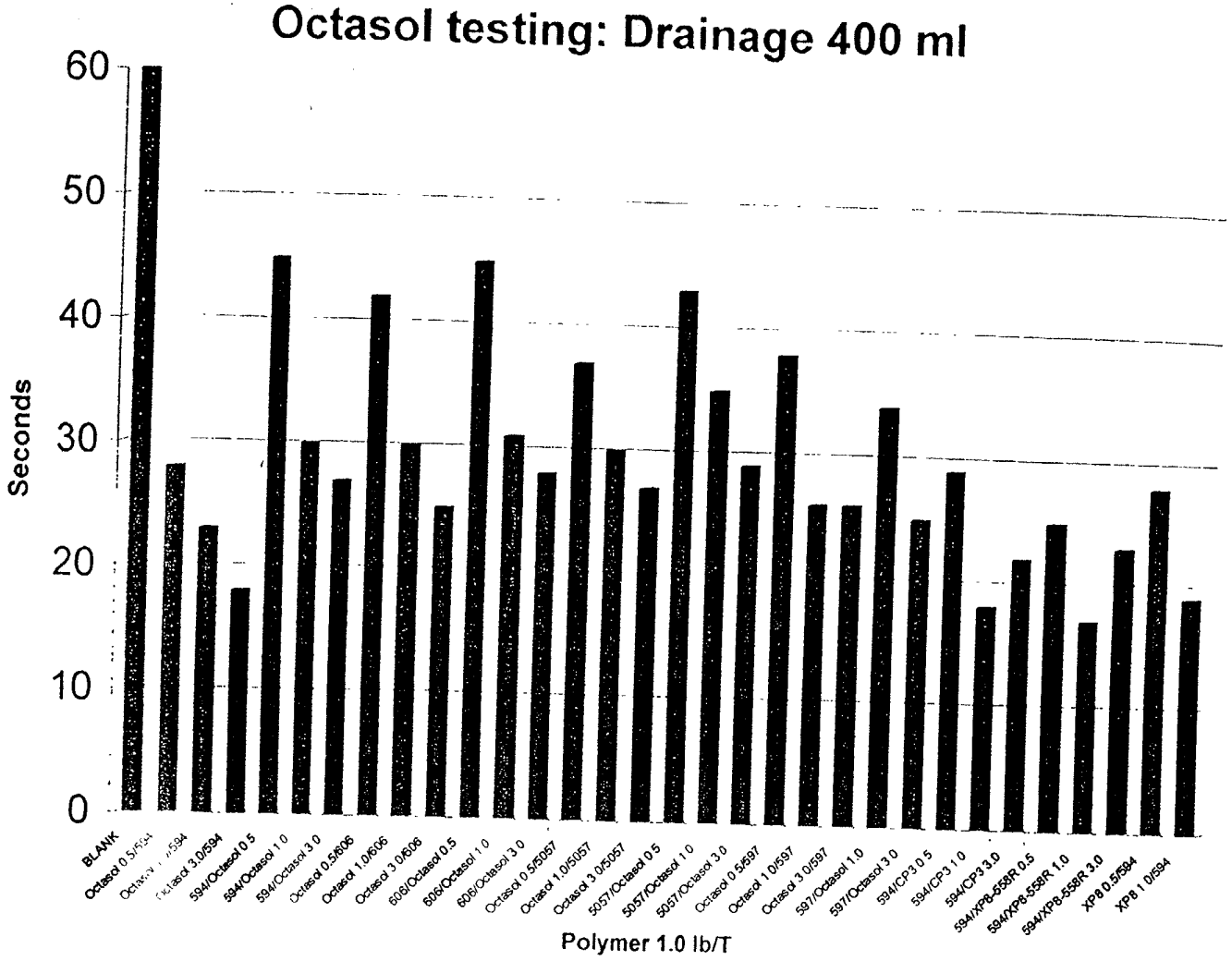

FIG. 26